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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,222	07/16/2003	Svein T. Vaage	PGS-02-16US	1222
7590	12/19/2005		EXAMINER	
E. Eugene Thigpen Petroleum Geo-Services, Inc. P.O. Box 42805 Houston, TX 77242-2805			LOBO, IAN J	
			ART UNIT	PAPER NUMBER
			3662	

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/621,222

**Applicant(s)**

VAAGE ET AL.

**Examiner**

Ian J. Lobo

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the international Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 10-15, 22, 39, 41 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The current amendment to paragraph 0035 describing the type of transform (i.e., the spatial Fourier transform and it's inverse) is not described in the original specification and there is no reason for one of ordinary skill in this art to believe that the intent of the transform described in the original specification would necessarily be a spatial Fourier transform.

The Declaration of applicant, cited September 27, 2005, has been noted. However, it does not overcome the rejection since it merely states that no new matter has been added by the current amendment. However, in as much as the amendment details a difference between the two transforms and details which transform is being utilized, then there is the issue of new matter being added to the specification.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent to Robertsson et al ('618) when taken in view of Harris et al ('331).

Per independent claims 1, 10, 16, and 26, Robertsson et al discloses a system, method and computer program for deghosting and water surface multiple reflection attenuation using pressure and vertical particle motion data. Robertsson et al discloses that a spatial filter is designed to effectively separate the up-going and down-going wavefield components of the seismic data.

The difference between claims 1, 10, 16 and 26 and Robertsson et al is the claims all specify a decomposition step (i.e, the spatial filtering step of Robertsson et al) taking place in the frequency domain and then inverse transforming the up-going component in the time domain. It is pointed out that the amendment to independent claims 1, 16, 26 and 33, stating that the multiple-free wavefield is determined "independently of knowledge of a source wavelet" does not differentiate over Robertsson et al since Robertsson et al does not specify that the source signature or wavelet forms an integral part of the transformation.

Harris et al discloses a method for enhancing seismic data by attenuating undesired noise using a filter. On col. 6, lines 6+, it is taught that the skilled artisan

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appreciates that filtering of seismic data are typically operated in the frequency domain, and thus data are first transformed from the time domain to the frequency domain, the data attenuated in the frequency domain, and then the filtered or attenuated data are transformed back to the time domain.

In view of the teaching of Harris et al that typically, seismic noise filtering, is achieved in the frequency domain, it would be obvious to one of ordinary skill in the art to modify Robertsson et al by spatially filtering the pressure and vertical particle motion data in the frequency domain, thereby effectively separating the up-going and down-going wavefield components, and then inverse transforming the filtered or separated data back to the time domain. Such a modification to Robertsson et al would provide greater multiples attenuation. Independent claims 1, 10, 16 and 26 are so rejected.

Per claim 33, see col. 2, lines 48+, wherein it is disclosed that one advantage of Robertsson et al is the insensitivity of the technique to streamer depth, thus allowing the streamer to be towed.

Dependent claims 2-9, 11-15, 17-25, 27-32 and 34-42 are further provided by the above combination of prior art.

### ***Response to Arguments***

5. Applicant's arguments filed September 27, 2005 have been fully considered but they are not persuasive.

First, it is pointed out that the arguments with respect to the spatial Fourier transform, and the commensurate amendment, are not convincing and further considered new matter.

Second, the amendment with respect to the "independently of knowledge of a source wavelet" and the arguments commensurate therewith are also not convincing since Robertsson et al does not specify the transform utilized is dependent upon source wavelet knowledge.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian J. Lobo whose telephone number is (571) 272-6974.

The examiner can normally be reached on Monday - Friday, 6:30 - 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on (571) 272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ian J. Lobo  
Primary Examiner  
Art Unit 3662